JOURNAL OF MYCOLOGY.

Vol. I. MANHATTAN, KANSAS, SEPTEMBER, 1885. No. 9.

THE NORTH AMERICAN SPECIES OF GLOEOSPORIUM

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In this genus which belongs in the *Melanconieæ*, the spores borne on basidia usually bacillary or acicular and fasciculate, originate in masses (acervuli) beneath the epidermis through which they finally burst in the form of a tendril or globule. The spores, mostly ovate-oblong, are hyaline or nearly so, and are not enclosed in any distinct perithecium. Saccardo in Syll., vol. III, restricts *Glœosporium* to those species having continuous spores, placing those with uniseptate spores in *Marsonia*, and those having spores with two or more septa in *Septoglœum* but we will here include all under *Glœosporium*.

A. Spores continuous.

1. GLŒOSPORIUM HAMAMELIDIS, Cke., Grev. XII, p. 26.

Amphigenous. Spots 1 cm. broad, suborbicular, dark brown. Spores subelliptical, obtuse, straight or slightly curved, hyaline, 10 x 2½—3 μ.

On leaves of *Hamamelis Virginica*, South Carolina (Ravenel).

2. GLŒOSPORIUM HEPATICÆ, Pk., 33d Rep. N. Y. St. Mus. p. 26.

Spots broad, irregular, often discoloring the whole leaf, dark-brown. Acervuli minute, scattered, epiphyllous, the thick tendrils pinkish when dry. Spores oblong or cylindrical, colorless, obtuse at each end, straight or slightly curved, 15—25 x 6½—7½ μ, generally 4-nucleate.

On leaves of *Hepatica acutiloba*, Helderberg Mts., N. Y., July, (Peck.)

3. GLŒOSPORIUM LAPORTEÆ, Pk. l. c.

Spots orbicular, yellowish-green with a dark margined, arid center. Spores simple, globose or elliptical, colorless, 4—6½ μ long, uninucleate or

binucleate, forming a palid globule on the upper surface of the spot.

On living leaves of *Laportea Canadensis*, New York (Peck.)

4. GLŒOSPORIUM ACERIS, Cke., l. c. Rav. F. Am. 525.

Hypophyllous. Spots irregular, cinereo-fuliginous, indefinite, pierced here and there. Spores elliptical, obtuse, hyaline, straight or flexuous, 18 x 5 μ.

On leaves of *Acer rubrum*, South Carolina (Ravenel.)

5. GLŒOSPORIUM NERVISEQUUM, Fckl. Symbolæ Mycol., p. 369, sub Fusario.

Acervuli erumpent, compact, rather prominent, orbicular or subelongated, soon becoming nearly black, mostly on the upper surface of the leaf and either on or close along side of the main nerves which are bordered by a narrow, dead, arid, brown strip, a large portion of the leaf, especially the apices of the lobes becoming dead and brown. Spores oblong-elliptical or subovate, hyaline, 8—12 x 5—6 μ, on rather stout basidia, mostly longer than the spores themselves.

On leaves of *Platanus racemosa*. Sent from California by Dr. H. W. Harkness.

This agrees very well with Fuckel's description except that the acervuli in the California specimens can hardly be described as "tuberculis liberis," nor are they for the most part on any "arid spot," but on the nerves themselves. From the small or rather poor specimen in Mycotheca Veneta 1290 it is difficult to form any definite opinion, and the specimen 1595 of the same collection, on young branches of *Platanus*, is, in our copy, a *Cytispora*, having minute (4—6 x ½ μ) spores on long, slender basidia. It is not therefore absolutely certain that the California specimens are really the same as the *Fusarium nervisequum*, Fckl., but, as we expect to distribute the specimens in N. A. F., some one having access to Fuckel's Fungi Rhenani will be able to decide.

6. GLŒOSPORIUM TRIFOLII, Pk. l. c.

Spots suborbicular, often concentrically zoned, brown. Spores oblong or cylindrical, obtuse, simple, hyaline, 15—23 x 4—6 μ.

On living leaves of *Trifolium pratense*, New York, (Peck.)

7. GLŒOSPORIUM RIBIS (Lib.) Mont. & Desm., Grev. II, p 83.

Spots orbicular, small, often confluent, brown. Acervuli epiphyllous, covered by the blackened cuticle, whitish within. Spores oblong, curved, 10 x 5—6 μ (Sacc. in Syll.), subrostrate at the apex, hyaline. In a specimen of *Leptothyrium Ribis*, from Cooke, the spores are mostly 15 x 6—7 μ. We have seen no American specimens, but in Grev. II, p. 83, *Leptothyrium Ribis*, Lib., which is a synonym of this, is credited to New England and Prof. Peck reports it on *Ribes prostratum*, Adirondack Mts., N. Y.

8. GLŒOSPORIUM FAGI (Desm.)

Spots suborbicular, dark brown above, olivaceous below. Acervuli minute, prominent, nearly honey-colored. Spores oblong-ovoid, or subrhomboid, 15—20 x 6—8 μ minutely guttulate, on cylindrical, fasciculate

basidia, nearly half as long as the spore.

On lower surface of *Fagus ferruginea* leaves, Pennsylvania (Dr. Martin.)

9. GLŒOSPORIUM QUERNUM, Hark. Bull. Cal. Acad. Sci., Feb. 1884.

Amphigenous, oozing out in small heaps. Spores hyaline, elliptic or oblong, with 1—3 vacuoles, 12—18 x 4—6 μ.

On leaves and young shoots of *Quercus agrifolia*, in Golden Gate Park, California, in some seasons giving the oaks the appearance of having been scorched by flame.

10. GLŒOSPORIUM SEPTORIOIDES, Sacc., in Miscell. Mycol., ser. II, p. 16. *Marsonia quercina*, Winter, Rabh.-Winter Fungi Eur. 3085.

Spots determinate, round or irregular, often confluent, becoming white above, yellowish or rusty-brown below, 2—4 mm. in diameter, with a narrow dark border. Acervuli hypophyllous, generally one in the center of each spot but sometimes several, scattered, covered, slightly elevated but scarcely visible, at length collapsing. Spores fusoid, nucleolate, curved, acute at each end, hyaline, 14—18 x 2 μ.

On living leaves of *Quercus imbricaria*, Mx., Missouri (Demetrio.) We have not been able to find any septum in the spores.

Var. *major*, on leaves of *Q. nigra* (?) at Newfield, N. J., has the spores 18—23 x 2 μ, endochrome often indistinctly divided in the center. Spots mostly smaller and showing less of the white color above. Acervuli mostly epiphyllous.

11. GLŒOSPORIUM BETULARUM, E. & M., Am. Nat., Dec. 1882, p. 1002.

Spots light-brown, nearly round, 2—3 mm. in diameter, border dark. Acervuli brown, amphigenous, falling out and leaving a dark, cup-shaped cavity, 120—140 μ. Spores hyaline, ovate or obovate, 9—10½ x 6 μ on very short basidia.

On leaves of *Betula nigra* and *B. lenta*, Sept., Bethlehem, Pa. (Rau), Illinois (Earle).

12. GLŒOSPORIUM ANGULATUM, Cke., Taxas Fungi, p. 142. sub Discella.

Gregarious, covered, splitting the epidermis in an angular manner. Spores fusoid-elongated, hyaline, 20 x 4 μ.

On branches of trees, Galveston, Texas.

13. GLŒOSPORIUM LINDEMUTHIANUM, Sacc. & Magnus, Mich. I, p. 129.

Spots on the pods or more rarely on the leaves and stems, subrotund, dark brown when dry, surrounded at first with a rufous border. Acervuli dirty-white, in the center of the spot, raising the epidermis in a pustuliform manner, then erumpent. Spores oblong, straight or curved, rounded at each end, 15—19 x 3½—5½ μ, borne on fasciculate, cylindrical, simple basidia, 45—55 μ long.

On living pods of *Phaseolus* (cult.) Bethlehem, Pa., (Rau) Newfield, N. J. (Ellis,) Wis. (Trelease.)

Dr. Farlow writes that he finds this species common on beans in the Cambridge Market since 1882.

14. Glœosporium punctiforme, Sacc. & Ell., Mich. II, p. 574.

Acervuli loosely gregarious, subcutaneous, fuscous, of medium size (½ mm. diameter) perforating the epidermis in the center. Spores ovate-oblong, biguttulate, hyaline, 5—6 x 3—3½ μ. Basidia arising from a proligerous, cellulose, dark straw yellow stratum, acicular, guttulate, hyaline, 15—20 x 2 μ.

On fading leaves of *Phormium tenax*, Philadelphia, Pa. (Dr. Eckfeldt.)

15. Glœosporium cinctum, B. & C., Grev. III, p. 13.

Acervuli minute, gregarious, surrounded by the blackened epidermis. Spores oblong, obtuse at each end, frequently curved, granular within. 10—15 x 2½—3 μ.

On some orchidaceous plant in a hot-house, Massachusetts (Russell.)

16. Glœosporum Pteridis, Hark. Bull. Cal. Acad., Feb. 1884, p. 32.

Hypophyllous, covering the whole surface, oozing out in large tendrils. Spores hyaline, obovate or elliptical, 10—24 x 6—10 μ.

Distorting the fronds of *Pteris aquilina*, Berkeley, Cal., May, (Hark.)

17. Glœosporium versicolor, B. & C., Grev. III, p. 13.

Spots reticulate, gray, 2—3 cm. broad. Acervuli erumpent. Spores oblong and clavate, hyaline, fuscous, 10—20 μ long.

On apples, So. Ca. (Ravenel.)

18. Glœosporium carpogenum, Cke., Grev. VII, p. 102.

Innate, scattered, covered by the cuticle which is at length perforated. Spores elongate-elliptical, hyaline, 13—18 x 3½, issuing in whitish tendrils.

On fruit of *Æsculus Californica*, Sierra Nevada Mts., Cal. (Harkness.)

19. Glœosporium lagenarium, Pass. sub Fusario. Erb. critt. Ital. II, no. 148. Sacc. & Roum., Rev. Mycol. 1880, p. 201. Ell. N. A. F. 950.

Acervuli subcutaneous-erumpent, generally circinating, minute, pulvinulate, slightly rose-colored. Spores ovate-oblong, sometimes inequilateral, 16—18 x 5—6 μ, continuous, nearly hyaline, borne on cylindric-fusoid, hyaline, fasciculate basidia, 15—50 x 3—5 μ.

On gourds, Philadelphia, Pa. (Dr. Eckfeldt.)

Whether the *Glœosporium Peponis*, B. & C., in Curtis' Cat. N. C. Plants belongs here we cannot say.

20. Glœosporium leguminis, Cke. & Hark., Grev. IX, p. 7.

Covered, scattered. Spores oval, hyaline, 12 x 6 μ, flowing out in a gelatinous mass.

On legumes, Cal. (Harkness.)

21. Glœosporium leguminum, Cke., Texas Fungi, p. 142, sub Discella, Rav. F. Am. 152.

Acervuli at first covered and pale, becoming nearly black and erumpent, depressed and subhysteriiform, and when well developed, seated on a pallid spot with a reddish, rust-colored border. Spores elliptical or pyriform, 1-nucleate, hyaline, 10—15 x 4—6 μ.

On pods of *Prosopis*, Galveston, Texas (Ravenel.)

As far as can be judged from the brief description, the preceding species is not distinct from this.

22. GLŒOSPORIUM CAPSULARUM, Cke. & Hark., Grev. XII, p. 94.

Gregarious, punctiform, mouth lacerate-cleft. Spores cylindrical, obtuse at each end, slender, straight, continuous, hyaline, 18—20 x 2½ μ, bursting out in pale, granular globules ("grumulos pallidos.")

On dead capsules of *Eucalyptus*, Calafornia (Harkness.)

23. GLŒOSPORIUM FUSARIOIDES, E. & K., Journ. Mycol. I, p. 3.

Acervuli ¼—⅜ mm. in diameter, subcuticular, scattered irregularly or collected in groups, in which case the part of the leaf occupied assumes a dark brownish look. The spores ooze out on both surfaces of the leaf but more abundantly above, being of an oblong-cylindrical shape, 20—30 x 5—6 μ, filled with greenish granular matter and globose nuclei and are borne on elongated cells (basidia) arising directly from the inner surface of the hymeneal cavity.

On fading leaves of *Asclepias Cornuti*, August, Kansas (Kellerman.)

24. GLŒOSPORIUM FRAXINEUM, Pk., 35th Rep. N. Y. St. Mus., p. 137.

Spots numerous, small, pale red with a darker or purplish-red border and usually with a minute, whitish center, nuclei (acervuli) few. Spores oblong-elliptical, colorless, 5—6 x 4 μ, sometimes with a minute nucleus at each end.

On living leaves of *Fraxinus pubescens*, June, Albany, N. Y. (Peck.)

25. GLŒOSPORIUM AFFINE, E. & K , Am. Nat. 1883, p. 1165, sub Phyllosticta.

Spots light rusty-brown of irregular outline, 4—5 mm. with a narrow, dark brown, scarcely raised border. Acervuli amphigenous, pale, 125—200 μ in diameter, mostly situated on or near the nerves of the leaf. Spores oblong, hyaline, 5 x 1½ μ, on basidia about 6 μ long.

On living leaves of *Sassafras*, July, Ohio, (Kellerman.)

26. GLŒOSPORIUM SALICIS, West, Exs. 1269.

Spots amphigenous, dark brown or nearly black, small (1 mm.), often confluent. Acervuli covered, scattered or confluent; cirrhi short, curved, white. Spores oblong, slightly curved, continuous, with a nucleus or oil globule at each end. We have seen no American specimens of this species, but Prof. Peck reports it on leaves of *Salix longifolia*, North Greenbush, N. Y., September, and sends the following note:

"Our specimens have the spores either simple or 2—3-nucleate and generally a little thicker towards one end. In size they are 15—23 x 7½—10 μ. Very unlike *G. salicinum*, Pk., which is rather a *Septogloeum*, though the septa are obscure."

27. GLŒOSPORIUM GLOTTIDII, E. & M., n. s.

In the single specimen seen, occupying the dead tip of the pod, the dead portion obscurely limited by a dull purplish border. Acervuli scattered, numerous, nearly black when dry, suborbicular, 250 μ in diam. Spores varying from ovate to oblong and cylindrical, 1—3 nucleate, the

longer ones sometimes a little curved, 9—16 x 3 μ, on rather slender basidia which are mostly a little shorter than the spores themselves.

On fruit of *Glottidium Floridanum*, D. C. From Florida, Com. Prof. F. L. Scribner.

28. GLŒOSPORIUM CORYLI (Desm.) *Phyllosticta corylina*, E. & M., in Am. Nat., Dec. 1884.

Spots amphigenous, light brick red, 2—5 mm, or by confluence much larger, often continuous along the margin of the leaf, accurately bounded by a narrow, darker colored border. Acervuli mostly hypophyllous, minute (90—120 μ) becoming nearly black. Spores oblong, 12—15 x 5—7 μ, rounded at the ends and narrower in the middle, usually with two nuclei, borne on short basidia. The spots are much larger than represented in the figure in Fungi Italici 1019, but the spores are exactly as there represented. This is certainly not a *Phyllosticta*, as there are no perithecia, though the black acervuli much resemble perithecia. The trees on which this fungus occurs were imported from England. We can not say whether the same thing is found on our native species of *Corylus*.

On living leaves of *Corylus Avallana*, Newfield, July, N. J.

29. GLŒOSPORIUM PHOMIFORME, Sacc. & Ell., Mich. II, p. 574.

Acervuli subgregarious, subcutaneous, fuscous, ½ mm. diameter, perforating the epidermis, in the center. Conidia ovate-oblong, biguttulate, hyaline, 5—6 x 3—3½ μ. Basidia acicular, 15—20 x 2 μ, guttulate, hyaline, arising from a cellular, dark straw-colored, proligerous stratum.

On leaves of *Phormium tenax* (cult.) near Philadelphia, Pa. (Dr. Eckfeldt.)

30. GLŒOSPORIUM QUERCINUM, West

In the Canadian Naturalist, X, p. 10, this species is credited to this country by De Thuemen. We have seen no specimens, the only one in our herbarium under this name (Fungi Gallici 2884), showing only a spot caused by some larva burrowing under the epidermis.

We copy the following description from Lambotte's Flore Mycol. Belge:

"Acervuli hypophyllous, dark reddish-brown, raising the epidermis into pustules and spotting the leaf with dark red-brown. Spores elongated-oval, cirrhi more or less distinctly orange-yellow."

31. GLŒOSPORIUM PHOMOIDES, Sacc. Mich. II, p. 540, F. Ital. tab. 1060.

Prof. J. C. Arthur of the Ag. Exp. Station at Geneva, N. Y., finds on the fruit of tomatoes what he considers to be this species. In the 3d Annual Report of the Station (1884), p. 381, he says of this fungus:

"It corresponds very well with the figure and description of G. phomoides, Sacc., and may be identical with it. The fungus develops just beneath and within the epidermis or skin of the fruit, and soon breaks through it and produces great numbers of spores on the ends of the protruding mycelium. To the naked eye, it only roughens the surface of the fruit by the spores and ragged edges of the broken skin, but on cutting open the tomato a firm, whitish mass reveals its extent."

Saccardo, in Michelia, describes this species as follows:

"Acervuli innate-erumpent, fuscous, pulvinate. Conidia oblong-clavate, abruptly attenuated below, rounded at the apex, 10—12 x 2½—3 μ, biguttulate, hyaline. Basidia bacillary, fasciculate, 20—21 x 1½ μ, hyaline, arising from a dark, cellulose, proligerous stratum."

B. Spores uniseptate (*Marsonia*, Fisch.)

32. GLŒOSPORIUM MELILOTI, Trelease. Prelim. List of Parasitic Fungi of Wis., p. 16.

Acervuli minute, inconspicuous, occurring in longitudinal rows, 2—5 mm. long, on the stem. Spores oozing out in pale, flesh-colored tendrils, colorless under the microscope, oblong, straight or slightly curved, 2-celled, 13—20 x 5—6 μ. In the smaller spores the septum is nearly central; in the larger ones it is nearer one end.

On stems of *Melilotus alba*, Wisconsin (Trelease.)

33. GLŒOSPORIUM POPULI, (Lib.) Mont. & Desm. *Leptothyrium populi*, Lib. *Glœosporium labes*, B. & Br *G. Berkeleyi*, Mont. (*G. Castagnei*, Mont. ?)

Spots brown, indefinite, often confluent over the greater part of the leaf. Acervuli scattered, epiphyllous, pale. Spores pyriform, hyaline, endochrome divided near the smaller end, 15—20 x 6—8 μ. We have seen no authentic specimens of *G. Castagnei*, Mont., which, see Sacc. in Mich. II, p. 119, is very closely allied to this, differing only in its narrower spores. The specimens in N. A. F. 1172, were referred to *G. Castagnei*, Mont,. as the measurements of the spores agree with those given by Saccardo in Mich., but on examining the specimens of *G. Populi* (Lib.), in Saccardo's Myc. Veneta, no. 1237, we find the spores to be 15—20 x 6—8 μ. The dimensions given in Michelia, I, p. 220, are 20 x 12 μ. N. A. F., 1172, is without doubt the same as M. V. 1237. The specimens of *G. Populi*, (Lib.) in our copy of Myc. Ven, 1291 are different, having larger, dark acervuli and linear or subfusiform spores, 5—15 x 1½—2 μ, on stout basidia 10—15 x 2½ μ

On leaves of *Populus alba*, Penn. (Martin); leaves of *Populus Fremontii*, Cal. (Harkness.)

34. GLŒOSPORIUM JUGLANDIS, Lib. sub. *Leptothyrio*, N. A. F. 1171.

Spots epiphyllous, suborbicular (½ cm.) dark cinerous with a rather indefinite border. Acervuli flattened, blackish, rugulose, 200 μ in diameter, with a gray nucleus. Spores fusoid, curved, subrostrate at the apex, 1-septate, hyaline, 20—25 x 5 μ.

On leaves of *Juglans cinerea*, Bethlehem, Pa. (Rau), Wis. (Trelease)

35. GLŒOSPORIUM NEILLIÆ, Hark. Bull. Cal. Acad. Feb. 1884, p. 31.

Epiphyllous, on small, angular, brown spots 2—3 mm. in diameter. Acervuli scattered, small, dark, mostly epiphyllous. Spores hyaline, ovate, straight or slightly curved, obtuse, 1-septate and strongly constricted, 15—20 x 6—8 μ (25—30 x 8 μ Hark.), on crooked, subramose, filiform basidia 30—40 x 1—1½ μ.

On leaves of *Neillia opulifolia*, Calafornia (Harkness.)

36. GLŒOSPORIUM LONICERÆ, Hark., l. c.

Spots amphigenous, orbicular or irregular, white above with a rusty brown margin, ferruginous below. Acervuli scattered, ephiphyllous, round, flat, black, .2 mm. in diameter. Spores clavate, mostly curved, obtuse above, narrowed nearly to a point below, with the septum nearer the narrow ends hyaline, 25—30 x 6—8 μ (35—40 x 7—9 μ Hark.)

On leaves of *Lonicera conjugalis*, Sierra Nevada Mts., Cal. (Harkness.)

37. GLŒOSPORIUM MARTINI, Sacc. & Ell., Mich. II, p. 574.

Spots amphigenous, minute (1½ mm.), rusty brown. Acervuli mostly a single one in the center of the spot, hypophyllous, ¼—½ mm. in diameter. Spores subhyaline, fusiform, curved, issuing in amber-colored masses, endochrome divided in the middle, 12—15 x ½ 2μ, on very short basidia.

On leaves of *Quercus obtusiloba*, Chester Co., Pa. (Dr. Martin.) *G. septorioides*, Sacc., scarcely differs from this except in its longer spores.

38. GLŒOSPORIUM POTENTILLÆ (Desm.) Ouds.

Spots epiphyllous, purplish-red when fresh, fading out when dry, subcircular, small. Acervuli covered, lenticular, pale, becoming nearly black, scattered, small. Spores oblong-clavate, or fusoid-clavate, the upper half curved to one side and subrostrate, 15—22 x 4—6 μ (20—25 x 7—9 μ, Sacc. in Syll.), edochrome distinctly once divided, hyaline, on very short basidia.

On living leaves of *Fragaria* (cult.), Pa. (Martin), Ills. (Earle.) On *Potentilla Anserina*, Cal. (Harkness.) Probably common throughout the country.

39. GLŒOSPORIUM TOXICODENDRI, E. & M., n. s.

Spots amphigenous, dirty white, small (2 mm.) with a rather broad, nearly black border. Acervuli scattered, not numerous, dark colored. Spores oblong, 1-septate, 12—15 x 5—6 μ.

On living leaves of *Rhus Toxicodendron*, Charles City, Iowa, Sept. Coll. Prof. J. C. Arthur.

40. GLŒOSPORIUM QUERCUS, Pk. (in literis.)

Spots amphigenous, suborbicular, 4—6 mm., definite. Acervuli hypophyllous, scattered, rather numerous. Spores oblong-cylindrical, 1-septate, straight or slightly curved, constricted more or less in the middle, ends subobtuse, 12—15 x 2—2½ μ, oozing out in amber colored masses. Allied to *Marsonia Martini*, S. & E., and *M. Quercina*, Winter, but differs in its more numerous acervuli and mostly rather shorter spores.

On living leaves of *Quercus ilicifolia*, N. Y. (Peck.)

41. GLŒOSPORIUM OCHROLEUCUM, B. & C., sub Septoria, Grev. III, p. 9. *Cryptosporium epiphyllum*, C. & E., Grev. VII, p. 37. N. A. F. 533.

Spots small (2—3 mm.), pale, surrounded by a narrow, dark margin. Acervuli innate, pale, few (1—5) or often only one in the center of the spot, opening mostly below. Spores crescent shaped with the ends subobtuse, 20—25 x 2½—3 μ, continuous at first but endochrome finally

divided in the middle, arising from the pointed apices of the cells forming the proligerous layer and oozing out in an amber-colored mass. In old specimens, emptied of spores, the places of the acervuli are marked by little cup-shaped cavities. All the characters of this fungus point to *Glœosporium*, and we place it there without hesitation.

On *Castanea vesca*, Newfield, N. J.

If we accept *Marsonia* as a genus distinct from *Glœosporium*, then this production must, in different stages of its growth, belong to two distinct genera. In our opinion, it is much better to regard *Marsonia* and *Septoglœum* as mere sections of *Glœosporium*; or, if they are to be regarded as distinct, they should in a systematic arrangement, stand consecutively, and not be separated by intervening genera.

C. Spores 2-or-more septate (*Septoglœum*, Sacc.)

42. GLŒOSPORIUM ANGELICÆ, Cke., Grev. VII, p. 34.

Spots fuscous, various. Acervuli gregarious, round, scarcely prominent. Spores cylindric-clavate, nucleate, at length biseptate, hyaline, 40—60 x 8 μ.

On fading leaves of *Archangelica*, South Carolina (Ravenel).

43. GLŒOSPORIUM NUTTALLII, Hark. l. c.

Spots epiphyllous, reddish-brown, 2—5 mm. in diameter, suborbicular and rather indefinitely limited. Acervuli, gregarious, often circinate, more distinctly visible on the lower face of the leaf, but discharging the spores in flesh-colored masses, more abundantly above. Spores cylindrical or clavate cylindrical, subhyaline, 1—5-septate, mostly 1-septate, with a row of nuclei, broader and more obtuse at the apex, 45—75 x 3—4½ μ (36—45 x 4—5 μ. Hark.)

On leaves of *Nuttallia cerasiformis*, California (Harkness.)

44. GLŒOSPORIUM FRAXINI, Hark. l. c.

Spots epiphyllous, minute, whitish, light rusty-brown when dry, angular and irregular, 4—10 mm. diameter. Acervuli epiphyllous. Spores cylindrical, mostly irregularly bent or curved, 2—5-septate, 20—40 x 3—3½ μ, mostly 25—35 x 3 μ (16—24 x 4—5 μ Hark.) issuing in pale, flesh-colored masses. The spots are scarcely visible below but are very abundant above, giving the leaf a mottled appearance.

On living leaves of *Fraxinus Oregana*, California (Harkness.)

45. GLŒOSPORIUM MACULANS, Hark., l. c.

Spots epiphyllous, circular, dark, 1—1½ cm., or often occupying one-half or more of the leaf, rather indefinitely limited, radiate, fibrous. Acervuli hypophyllous, small, gregarious or scattered. Spores oblong-fusoid or subcylindrical with one end pointed and curved and the other rounded-obtuse, endochrome, 1—5 times divided, 30—50 x 6—9 μ. The leaves are also discolored on the lower surface. The radiate-fibrous structure on the upper surface of the leaf is peculiar.

On leaves of *Salix lasiolepis*, California (Harkness.)

We have seen no specimens of *Septoglœum salicinum*, Pk., which may not be sufficiently distinct from this.

46. Glœosporium salicinum, Pk. 33d Rep. N. Y. St. Mus., p. 26.

Spots large, irregular, indefinite, arid, pale. Spores elongated, subfusiform, curved or flexuous, obscurely triseptate, each cell usually containing 2 nuclei, colorless, 40—50 μ long. Usually one end of the spore is more acute than the other."

On living leaves of *Salix sericea*, N. Y. (Peck.)

In the character of its spores this species seems to approach *Septoria*, but nothing is said in the description above quoted, of *acervuli* or *perithecia*. [Eds.]

47. Glœosporium Apocyni, Pk., 34th Rep., N. Y. St. Mus., p. 45.

Spots few, large, irregular, brown or blackish-brown. Acervuli few. Spores large, subcylindrical, rounded at the ends, hyaline, 40—50 x 7½ μ and 3—7-septate, each cell nucleate.

On living leaves of *Apocynum cannabinum*, Sept., N. Y. (Peck.)

The spots at length become thick, brittle and almost black, and the surrounding tissue fades to a yellowish hue. The septa of the spores are not always distinct but the nuclei are plainly visible. The general appearance is much the same as that of *Phyllosticta Apocyni*, E. & M., but the fruit is very different.

Not having specimens of several of the species enumerated, we could only copy the descriptions, but we have carefully examined all those of which specimens were accessible to us.

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ERRATA.

On page 85, 16th line from bottom, for *Nardosmii*, read *Nardosmiæ*.
On page 100, 3d line from bottom, for *Prinus*. read *Pinus*.
On page 102, after the article "Supplementary Notes on Ramularia," the names of Messrs. Ellis and Everhart should have been given.
On page 104, 21st line from bottom, instead of *on*, read *or*.
On page 105, 2d line from top, for 1036, read 1035.

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